

**Claims**

1. An actuator assembly for reading and writing data from and to a data storage disc in a disc drive, the actuator assembly comprising:

an actuator arm rotatably mounted adjacent the data disc, the arm having a top surface  
5 and a bottom surface and an arm circuit alignment pin projecting from one of the surfaces of the actuator arm, the actuator arm including a head gimbal assembly support portion located at a proximate end of the actuator arm; and

an arm circuit fastened to one of the surfaces of the actuator arm, wherein the arm  
circuit has an arm circuit alignment aperture receiving the arm circuit alignment pin to position  
10 the arm circuit on one of the surfaces of the actuator arm.

2. The actuator assembly of claim 1, further comprising a head gimbal assembly fastened to the head gimbal assembly support portion of the actuator arm, the head gimbal assembly carrying a data transducer for writing and reading data to and from the data disc.

3. The actuator assembly of claim 2, further comprising a gimbal circuit  
15 electrically coupling the data transducer to the arm circuit, the gimbal circuit being partially routed along the head gimbal assembly and over the surface of the actuator arm to which the arm circuit is fastened.

4. The actuator assembly of claim 3, further comprising:  
the gimbal circuit having a gimbal circuit alignment aperture; and  
20 a gimbal circuit alignment pin projecting from the actuator arm, wherein the gimbal circuit alignment aperture receives the gimbal circuit alignment pin to position the gimbal circuit over the surface of the actuator arm.

5. The actuator assembly of claim 4, wherein the arm circuit is located on the proximate end of the actuator arm.

25 6. The actuator assembly of claim 1, wherein the arm circuit is fastened to the top surface of the actuator arm.

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7. The actuator assembly of claim 6, further comprising a head gimbal assembly fastened to the head gimbal assembly support portion of the actuator arm, the head gimbal assembly carrying a data transducer for writing and reading data to and from the data disc.

8. The actuator assembly of claim 7, further comprising a gimbal circuit  
5 electrically coupling the data transducer to the arm circuit, the gimbal circuit being partially routed along the head gimbal assembly and over the surface of the actuator arm to which the arm circuit is fastened.

9. The actuator assembly of claim 8, further comprising:  
the gimbal circuit having a gimbal circuit alignment aperture; and  
10 a gimbal circuit alignment pin projecting from the actuator arm, wherein the gimbal circuit alignment aperture receives the gimbal circuit alignment pin to position the gimbal circuit over the surface of the actuator arm.

10. The actuator assembly of claim 1, wherein the arm circuit is fastened to the bottom surface of the actuator arm.

11. The actuator assembly of claim 10, further comprising a head gimbal assembly fastened to the head gimbal assembly support portion of the actuator arm, the head gimbal assembly carrying a data transducer for writing and reading data to and from the data disc.

12. The actuator assembly of claim 11, further comprising a gimbal circuit electrically coupling the data transducer to the arm circuit, the gimbal circuit being partially  
20 routed along the head gimbal assembly and over the surface of the actuator arm to which the arm circuit is fastened.

13. The actuator assembly of claim 12, wherein the arm circuit is located on the proximate end of the actuator arm.

14. The actuator assembly of claim 12, further comprising:  
the gimbal circuit having a gimbal circuit alignment aperture; and  
25 a gimbal circuit alignment pin projecting from the actuator arm, wherein the gimbal

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circuit alignment aperture receives the gimbal circuit alignment pin to position the gimbal circuit over the surface of the actuator arm.



15. In a disc drive, an actuator assembly for reading and writing data from and to a data disc, the actuator assembly comprising:

an actuator arm rotatably mounted adjacent the data disc, the actuator arm having a top surface and a bottom surface, the top surface of the actuator arm including one or more arm

5 circuit alignment pins;

an arm circuit mounted to the top surface of the actuator arm and aligned to an arm circuit mounted position on the top surface of the actuator arm via the arm circuit alignment pins;

a head gimbal assembly operably connected to the actuator arm at the bottom surface

10 and including a data transducer for writing and reading data to and from the data disc; and

a gimbal circuit electrically coupled with the data transducer and the arm circuit, the gimbal circuit being partially positioned along the head gimbal assembly and partially positioned along the top surface of the actuator arm.

16. The actuator assembly of claim 15, wherein the top surface of the actuator arm includes one or more gimbal circuit alignment pins configured to align the gimbal circuit to a gimbal circuit mounted position on the top surface of the actuator arm.

17. The actuator assembly of claim 15, wherein the head gimbal assembly is laser-welded to the actuator arm.

18. The actuator assembly of claim 15, wherein the head gimbal assembly is screw  
20 mounted to the actuator arm.

19. The disc drive of claim 15, further comprising an actuator coil operably coupled to the actuator arm.

20. The actuator assembly of claim 19, wherein the actuator coil is adhesive-bonded to the actuator arm.

21. The actuator assembly of claim 15, wherein the actuator arm includes a pivot bearing support portion located between the proximate end and the distal end of the actuator

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arm, and the actuator assembly further comprises a pivot bearing coupled directly to the actuator arm at the pivot bearing support portion.

22. The actuator assembly of claim 21, wherein the pivot bearing is adhesively bonded to the pivot bearing support portion of the actuator arm.

23. The actuator assembly of claim 21, wherein the pivot bearing is press-fit to the pivot bearing support portion of the actuator arm.

24. An actuator assembly in a disc drive, the disc drive including a data disc for storing data and a flex connector for communicating data signals to a printed circuit board, the actuator assembly comprising:

an actuator arm having a top surface and a bottom surface rotatably mounted adjacent  
5 the data disc, the actuator arm including a substantially V-shaped coil support portion located at a distal end of the actuator arm, a head gimbal assembly support portion located at a proximate end of the actuator arm, and a pivot bearing support portion located between the proximate end and the distal end of the actuator arm;

a head gimbal assembly carrying a data transducer for writing and reading data to and  
10 from the data disc, the head gimbal assembly being fastened to the head gimbal assembly support portion; and

means for electrically coupling the data transducer to the flex connector.

25. The actuator assembly of claim 24 wherein the means for electrically coupling  
15 includes a signal conditioning portion fastened to either the top surface or the bottom surface of the actuator arm.

26. The actuator assembly of claim 25 wherein the signal conditioning portion is operable to amplify data signals received from the data transducer.

27. The actuator assembly of claim 26, wherein the signal conditioning portion comprises:

an arm circuit fastened to the top surface of the actuator arm between the pivot bearing support portion and the head gimbal assembly support portion, the arm circuit having an arm  
25 circuit alignment aperture receiving an arm circuit alignment pin projecting from the top surface of the actuator arm to position the arm circuit on the top surface of the actuator arm.

28. The actuator assembly of claim 26, wherein the signal conditioning means is an arm circuit fastened to the bottom surface of the actuator arm, the arm circuit having an arm circuit aperture receiving an arm circuit alignment pin projecting from the bottom surface of the actuator arm to position the arm circuit on the bottom surface of the actuator arm.

29. The actuator assembly of claim 28, further comprising a gimbal circuit electrically coupling the data transducer to the arm circuit, the gimbal circuit being partially routed along the head gimbal assembly and under the bottom surface of the actuator arm.

30. The actuator assembly of claim 29, further comprising:  
a gimbal circuit alignment aperture on the gimbal circuit; and  
a gimbal circuit alignment pin on the actuator arm, wherein the gimbal circuit alignment aperture receives the gimbal circuit alignment pin for positioning of the gimbal circuit under the bottom surface of the actuator arm.